

# EMILY ZENG

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## Skills Summary

Languages  
fluent

- Python
- C++

familiar

- NodeJS
- HTML/CSS
- C

Technologies / Tools

- Keras/Tensorflow
- LSTM
- CNNs
- Sk-learn
- Flask
- Q-learning
- LSTM

## Education

University of  
Waterloo

Mechatronics  
Engineering  
2016 – 2021

## Work Experience

**Computer Vision Engineer** – Synapse Technology, Palo Alto Jan-April 2019

Developed and analyzed CNN models for detecting threats from x-ray scans

- Developed fine grain rotational data augmentation method for object detection, significantly improving detection in underrepresented classes
- Trained and evaluated production models being deployed across the world
- Created better tools used for preprocessing and evaluation of model and data

**Data Scientist** – Praemo, Waterloo

May-Aug 2018

Built a neural network library to predict machine failure in industrial robots

- Used LSTM to develop a general library for detecting anomalies in time series, contributing to company's intellectual property
- Pre-processed client data and applied neural networks to monitor robot conditions, then evaluated and visualized data and results

**Robotics Software Developer** – ESI, Markham

Sep-Dec 2017

Solved robotic navigation problem using reinforcement learning (Q-learning)

- Used Keras to train a multilayer artificial neural network with Python
- Converted trained model to C++ to fit it on a microcontroller
- 95% success rate in simulation and 85% success rate on actual robot

**ML Course Developer** – Stackup/NUS, Singapore

Jan-April 2017

Assisted in developing machine learning driven data science course

- Developed a facial recognition program using SVM
- Created a MEAN stack E-commerce website for use in case studies

## Projects

**Quiz it!** – Yhacks, Yale

Dec 2017

2<sup>nd</sup> place overall, winner of Google API prize and Best Education Hack

- Translated photos of text into fill-in-the-blank questions for Alexa skill
- Extracted important sentences and removed highest salience noun
- Dereferenced pronouns by assuming a Subject-Verb-Action structure

**Noter** – Hack Harvard, Harvard

Nov 2017

- Parse video lectures into text segments with contextual figures for study notes
- Split up videos using face detection to find pauses in writing
- Highlighted keywords using entity analysis of audio transcript

**Troll Index** – EngHack, Waterloo

May 2017

Hack Harassment winner

- Built an internet troll identifier for reddit using Python's Natural Language Toolkit's sentiment analysis